REMARKS

This amendment is responsive to the non-final Office Action of September 28, 2010. Reconsideration and allowance of claims 1, 4, 6-9, and 12-23 are requested.

The Office Action

Claims 1, 4, and 6-9 stand rejected under 35 U.S.C. § 112, second paragraph, and under 35 U.S.C. § 103 over Front (US 2001/0041835) as modified by Etienne ("Soap-Bubble Visualization and Quantitative Analysis of 3D Coronary Magnetic Resonance Angiograms").

35 U.S.C. § 112

The claims have been carefully amended to address the issues raised by the Examiner in the 35 U.S.C. § 112 rejection.

The Claims Distinguish Patentably
Over the References of Record

Claim 1 calls for recording at least two image data records including a morphological record and a functional record. Claim 1 next calls for determining an imaging specification. Next, claim 1 calls for using the imaging specification on each of the two data records to create a combined two-dimensional representation. Note that claim 1 does not call for the data records to be aligned and combined in three dimensions. Rather, the two data records come together as they are operated upon by the imaging specification.

By contrast, Front teaches that the SPECT or functional image and the CT or MR morphological image should be combined in three dimensions, using the fiducials 14 that are imageable in both imaging modalities. Once Front has combined the functional and morphological images in 3D, then Front can display (1) the axial sections (slices) of the functional image as shown in Figure 2A, (2) the structural or morphological image as shown in Figure 2B, or (3) slices of the registered images as shown in Figure 2C. Once Front has combined the SPECT and CT images, Front can use these combined images to navigate the movement of a catheter through the vasculature to a target TG.

Navigating a catheter through the vasculature can be a difficult process. The vasculature typically branches at numerous points between the entry point and the target point. To make sure that the catheter is passing along the proper branch, Front will want to display axial sections or slices along various planes, e.g., an axial slice that is substantially coplanar with the unbranched section of the vessel and the two branches.

It is submitted that without a combined 3D data set, Front will not generate the appropriate axial slices which he needs for catheter navigation.

It is unclear what Etienne would add to Front. Etienne does not combine functional and morphological image data sets. Rather, Etienne generates a planar reconstruction or image of 3D anatomy "in which 'true' distances are not maintained" (emphasis added). First, Etienne does not disclose that its technique can or should be used for combining two 3D image data sets.

Second, it is submitted that there is no motivation to try to re-engineer the Etienne technique into an image combining technique. First, in the Etienne two-dimensional images, the true distances are not maintained. If the axial slices of Front did not have true distances, such distortions could lead to poor or erroneous results. Second, it is submitted that one would not want to use Etienne to create 2D images for use in the Front method. Such 2D projection images superimpose various levels of vasculature, making vessel crossings and branching indistinguishable or at least difficult to distinguish. Moreover, as suggested above, if the two-dimensional image were orthogonal to a branch in the vasculature, the branch could be invisible.

Thus, Front calls for combining the functional and morphological data sets in 3D in order to get the information which he needs to perform the described functions. Etienne does not disclose a technique for combining functional and morphological images. Rather, Etienne discloses a technique for visualizing three-dimensional data in 2D. By distinction, claim 1 calls for operating on two (or more) image data records with an imaging specification that then creates a two-dimensional visualization or display in which information is combined.

Accordingly, it is submitted that not only is there no teaching or motivation to combine Front and Etienne, but, also, if one were to combine the two, one would not end up with the combination of claim 1. Accordingly, it is therefore

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submitted that claim 1 and claims 4, 6-9, and 21-23 dependent therefrom distinguish patentably over the references of record.
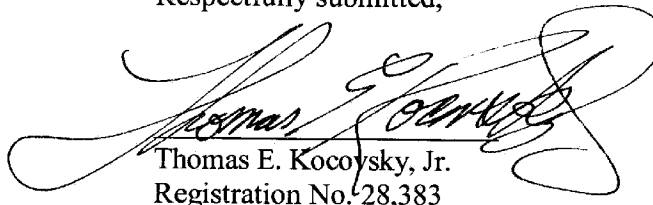
New claim 12 is based on claim 1, but sets forth the various operations in more detail and, it is hoped, more clearly. Accordingly, it is submitted that claim 12 and claims 13-20 dependent therefrom distinguish patentably over the references for the reasons discussed above and others.

CONCLUSION

For the reasons set forth above, it is submitted that claims 1, 3, 6-9, and 12-23 distinguish patentably and unobviously over the references of record and meet the other statutory requirements. An early allowance of all claims is requested.

In the event the Examiner considers personal contact advantageous to the disposition of this case, the Examiner is requested to telephone Thomas Kocovsky at 216.363.9000.

Respectfully submitted,

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